













  
Yorkshire Philosophical Society.

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ANNUAL REPORT

FOR

MDCCCLXXXIII.





ANNUAL REPORT  
OF THE COUNCIL  
OF THE  
YORKSHIRE  
PHILOSOPHICAL SOCIETY

FOR

MDCCCLXXXIII.

PRESENTED TO THE ANNUAL MEETING,

FEBRUARY 5<sup>TH</sup>, 1884.



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YORK:  
J. SOTHERAN, BOOKSELLER, CONEY STREET.

1884.



TRUSTEE  
OF  
THE YORKSHIRE MUSEUM,

APPOINTED BY ROYAL GRANT.

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COLONEL EDWARD W. HARCOURT, M.P.

PATRONESSES

OF THE

**Dorsetshire Philosophical Society.**

HER MAJESTY THE QUEEN.

H. R. H. THE PRINCESS OF WALES.

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H. R. H. THE PRINCE OF WALES, K.G.

H. R. H. THE DUKE OF CONNAUGHT, K.G.

HIS GRACE THE ARCHBISHOP OF YORK, F.R.S.

# OFFICERS OF THE SOCIETY, 1884.

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HIS GRACE THE ARCHBISHOP OF YORK, F.R.S.

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## CURATORS :

|                           |                                                                    |
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| GEOLOGY . . . . .         | W. REED, F.G.S.                                                    |
| MINERALOGY . . . . .      | W. H. HUDDLESTON, M.A.,<br>F.G.S.                                  |
| INSECTS AND CRUSTACEA . . | REV. W. C. HEY, M.A.                                               |
| COMPARATIVE ANATOMY . .   | T. ANDERSON, M.D.                                                  |
| BRITISH ORNITHOLOGY . .   | W. H. RUDSTON READ, M.A.,<br>F.L.S.                                |
| ANTIQUARIAN DEPARTMENT .  | { REV. W. GREENWELL, D.C.L.,<br>F.R.S.<br>REV. CANON RAINE, D.C.L. |
| LIBRARY . . . . .         | T. GOUGH, B.Sc.                                                    |
| BOTANY . . . . .          | WILLIAM MATTERSON, M.D.                                            |
| CONCHOLOGY . . . . .      | REV. W. C. HEY, M.A.                                               |
| OBSERVATORY & METEOROLOGY | T. S. NOBLE, F.G.S.                                                |

## KEEPER OF THE MUSEUM :

HENRY MAURICE PLATNAUER, A.R.S.M., M.M.S.

# REPORT OF THE COUNCIL

OF THE

## YORKSHIRE PHILOSOPHICAL SOCIETY,

FEBRUARY 5TH, 1884.

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The Council in presenting their Sixty-first Annual Report are able again to congratulate the Members on the financial prospects of the Society and of the state of the valuable collections under its care.

The total income for the past year amounts to £1383 19s. 6d., whilst the outgoings are £1362 11s. 1d., leaving a balance of £21 8s. 5d. on the credit side of the Treasurer's balance sheet.

The items of income and expenditure will be more particularly referred to when the Treasurer's balance sheet is read, so that it will not be necessary further to refer to the Society's finances in this part of the report.

The Council propose to consolidate the debt due to the Bank with the debt due to the Yorkshire Insurance Company, the Principal and Interest of such debt so consolidated to be repaid by annual instalments extending over 30 years.

The Report will now set forth in detail the present state of the various scientific departments in the Museum.

The Honorary Curator of GEOLOGY reports that the Department has received several important additions during the year. Amongst them are gifts from the following:—Wm. Reed, Esq., F.G.S.; Lord Haldon and the British Association; J. F. Walker, Esq., M.A.; Sir Henry Boynton, Bart.; E. Penton, Esq., F.G.S.; W. Roden, Esq.; Mr. Gregson; Rev. Canon Raine, D.C.L.; S. Chadwick, Esq.; Directors of York Gas Company; Miss Raine; Miss Eden.

The collection of Yorkshire fossils and rocks has also been increased by numerous specimens collected by the Keeper of the Museum. These include species and rock-specimens from the Coral Rag of Thornton, the Millepore of South Cave and of Whitwell, the Lower Calcareous grit of Castle Howard, the Chalk of Hessle, and the Upper Calcareous grit of Pickering.

A valuable and interesting collection of remains from Kent's Cavern has been presented by Lord Haldon (proprietor of the Cavern) and the British Association.

The fossils in the Tertiary room have been for the most part re-arranged and re-labelled. The Jurassic specimens in the Saurian room have been completely re-arranged stratigraphically.

A large number of explanatory labels conveying information in a popular form has been placed in various parts of the collection.

In the ANTIQUARIAN Department the chief work of the year has been the arranging of the George Robinson Collection of Antiquities. The Irish flint and stone implements have found a home near the English series, whilst many objects of bronze and iron from the same country have been placed in a new case which the donors very considerably made a portion of their gift. To make room for the Irish flint and stone, the Palæolithic implements and many prehistoric remains from other countries have been removed to a case which formerly contained the greater portion of the Osborne Collection of Shells; whilst the Shells, in their turn, are now in a handsome case, for which the Members of the Society are indebted to the kindness of their old friend, Mr. William Reed. The armour belonging to the George Robinson Collection is now arranged on two large shields or scutcheons in the Theatre, to which it has always been appended.

The Curator, therefore, may congratulate the Society on the reception and exhibition of a large and varied collection of objects without any tax upon its resources.

The chief acquisitions during the year are as follows:—

A large number of carvings in limestone and marble, found under the Vicarage House of St. Michael-le-Belfrey, and very

kindly deposited here by the Vicar. We were already in possession of a number of specimens of each series found many years since under the neighbouring house, recently tenanted by Provost Browne, as well as in other parts of the City. It is probable that they are the remains of shrines in the Minster, which were removed in the 16th century, possibly from St. Sepulchre's Chapel, which stood between the present Residence-house and the Nave, or from the stately shrine in the Nave which covered the tomb of St. William. Wherever they may have come from, these carvings are of the rarest beauty, and although they may be equalled in two or three ancient churches in the country, they can be surpassed in none.

The other discoveries in York during the past year have been up to the average. A deep excavation was necessary to lay the foundations of the New Mechanics' Institute, and this revealed a fragment of a Roman inscribed tablet, a sculptured stone of Danish or Anglo-Saxon work, and other objects of interest. Under the New Post Office in Lendal a drain, and a large portion of a stone wall of Roman construction were discovered, which may perhaps form the subject of a Paper for one of the meetings of the Society.

The Society has acquired by purchase a large number of implements in flint and stone from the Yorkshire Wolds, and many Roman silver coins—Consular and Imperial—which were wanting in the Society's series.

The Society is indebted to Mr. W. Atkinson, not only for much kind help and advice, but also for a valuable gift of an Etruscan tomb in marble, which was acquired at Rome some years ago.

The Society has likewise received from Mr. C. H. Woodruff, of Chiswick, some interesting specimens of Roman Pottery found in the Upchurch Marshes; and to Major Barstow it is indebted, among other things, for three Imperial Gold Roman coins, and some fine rings and engraved stones from the East.

Report of the Honorary Curator in MINERALOGY.—Some additions have been made to the Mineral Collection during the past year, principally amongst the minerals of the heavy metals.

The majority of the new specimens were presented by the Honorary Curator; they having formed a portion of the duplicates of the Tennant Collection. At present the additional specimens are in drawers, but it is intended to introduce some of the best into the mineral cabinet, and at the same time to remove some of the inferior specimens of the old collection. It may be convenient also to complete the arrangement and re-labelling of the entire collection, which was commenced some time ago.

Amongst the minerals referred to in the preceding paragraph are fine specimens of *Pyromorphite*, *Mimetesite* (variety, *Kampylite*), well crystallized *Crocoisite*, *Hemimorphite*, and *Proustite*. With these additions the suite of Silver, Lead, and Zinc Minerals may be considered thoroughly representative.

Some well crystallised specimens of *Dolomite*, *Celestine*, *Sulphur*, and *Cassiterite* are especially deserving of notice; and there are crystals of *Blende* which exhibit the characteristic striations on the faces, and thus possess considerable interest from a crystallographic point of view.

But few additional specimens of Silicates were acquired, as the original collection was found to be tolerably rich in this respect.

The chief deficiency is in the triclinic feldspars which, with the exception of *Labradorite*, are poorly represented. It will be remembered that the minerals of the quartz group and the silicates were arranged and re-labelled by the present Honorary Curator a year or two ago.

The following species, added during the past year, were previously unrepresented in the collection: — *Psilomelan*, *Rhodochroisite*, *Melanterite*, *Erythrite*, *Clinoclase*, *Realgar*, *Atacamite*, *Domeykite*, *Datholite*.

The Honorary Curator of COMPARATIVE ANATOMY has to report that the collection under his care is in good order. The additions during the past year have been of a minor character.

DEPARTMENT OF CONCHOLOGY. — Mr. William Reed has presented the Department with a capacious cabinet. There

is now room for further arrangement of the specimens already possessed by the Museum, and also for making some additions to them. The Curator is commencing this work at present.

DEPARTMENT OF ENTOMOLOGY. — The work done in this Department has only extended to the re-arrangement of a few foreign Coleoptera.

BOTANICAL Curator's Report. — The British Herbaria have been examined and found in a good state of preservation.

Thirty valuable Stove and Greenhouse Plants, including a few Orchidaceæ and Ferns, have been presented to the Society by W. H. Rudston Read, Esq.

## METEOROLOGY.

The barometer during 1883 was specially noticeable for the great range in January of over two inches in three days, from 30·631 on the 23rd to 28·630 on the 26th. The high maxima in February, March, and April are also interesting, although falling short of the extraordinary record, 30·894, in January of the previous year. The mean readings were normal.

Except in March the temperature was never low, either during the month or on any one day. The maximum temperatures, also, were very moderate in summer, and abnormally high in winter, so that the highest record, 75·7 in July, hardly exceeds the maximum of January by 20°. The opening days of May were colder than those which ushered in the year. March, which began very mild, brought phenomenal cold in the second week, zero being registered at Kirby Hall, 12 miles to the N.W., and 5° or lower at other places between York and Thirsk. Our record on the same day was 8°.

Another year of heavy rainfall, especially due to the excess in June and July, is added to the series which began in 1875, so that, as Mr. G. J. Symons has pointed out, nothing similar to it has been known for over 150 years. March, April, May, and August were very dry; 4·53 inches in July and 4·31 in September are the heaviest monthly totals, whilst 1·01 and 1·12 inches were recorded respectively on June 29th and July

20th. The year's total was 28·29 inches on 210 days. With this we may compare 22·61 inches at Strathfield Turgis, 25·61 at Hitchin, 67·69 on Dartmoor, and 147·68 on Seathwaite, Cumberland. During the thunderstorm on the former date a return flash, apparently, passed upwards through the laboratory gasfittings at the Friends' School, Bootham.

We have to thank Mr. R. J. Farmer, Coney Street, Mr. H. Richardson, Cherry Hill and Ilkley, Mr. Jonathan Burt, Park Street, for their respective returns, and Mr. R. Thompson for obtaining these and the returns from Hull.

The wind returns do not require any special comment. Very severe gales were experienced on January 25th, September 1st, and December 12th. Thick incrustations of salt and dirt, consisting partly of diatoms, coated the windows after the last.

Auroras were seen on March 26th, 27th, and on several other occasions.

No floods of extraordinary height will be found in the accompanying table, except that of January 30th, which reached 12ft. 10in. above summer level.

The most remarkable phenomenon of the year has been the lurid effects at sunrise and sunset, first noticed in England on November 8th, and lasting with diminished splendour to the present time. Their cause has been traced, with some probability, to the unprecedented volcanic eruptions of Krakatoa, an island between Java and Sumatra, on August 27th and 28th. The general features were as follows:—A very early flush about  $1\frac{1}{2}$  hours before sunrise soon grew lurid like a distant fire, would nearly die and be followed by an orange glow, changing to exquisite rose and mauve tints, green and yellow reaching to the zenith. As these, half an hour before sunrise, yielded to the ordinary sky tints, a counter glow, like a pink halo, came in the region opposite the unrisen sun, disappearing in 10 minutes. However clear the previous night, delicate hazy clouds, like ghosts of Stratus clouds formed along the horizon from south to east. These, at and after sunrise, became silvery white, and usually disappeared in about an hour. The sky from  $10^{\circ}$  to  $30^{\circ}$  from the sun was often strongly tinged with pink and yellow, or tawny coloured closer round. Identical

phenomena, in reverse order, occurred at sunset, and various conditions of cloud marvellously modified the general effect. The results of complementary colouring on the clouds, moon, venus, and even terrestrial objects, especially brick houses and grass, were often very extraordinary.

### HEIGHT OF THE RIVER OUSE, 1883.

|           |    |    |                                                                                                                |
|-----------|----|----|----------------------------------------------------------------------------------------------------------------|
| January.. | .. | .. | Various heights from 1 foot above Summer Level, to 12ft. 10in. on the 30th.                                    |
| February  | .. | .. | From S. L. to 9ft. 3in. on the 1st.                                                                            |
| March     | .. | .. | „ S. L. to 7ft. 6in. on the 31st.                                                                              |
| April     | .. | .. | „ S. L. to 5ft. 6in. on the 29th.                                                                              |
| May       | .. | .. | „ S. L. to 7ft. 6in. on the 1st.                                                                               |
| June      | .. | .. | Principally S. L., highest 4ft. 2in. on the 27th.<br>Water drawn off from the 24th to the 27th.                |
| July      | .. | .. | 16 days S. L., remainder various, highest, 7ft. 6in. on the 22nd. Water drawn off from the 25th to August 2nd. |
| August    | .. | .. | S. L. during the whole month. Water drawn off on the 11th.                                                     |
| September | .. | .. | Principally S. L., highest 4ft. 6in. on the 27th.                                                              |
| October.. | .. | .. | 20 various heights, highest 9ft. 2in. on the 18th to S. L.                                                     |
| November  | .. | .. | Various heights from S. L. to 4ft. 6in. on the 26th.                                                           |
| December  | .. | .. | Various heights from S. L. to 4ft. 3in. on the 23rd.                                                           |

### HEIGHTS IN JANUARY.

|      |    |    |    |    |    | feet. | inches. |
|------|----|----|----|----|----|-------|---------|
| 25th | .. | .. | .. | .. | .. | 7     | 6       |
| 26th | .. | .. | .. | .. | .. | 6     | 4       |
| 27th | .. | .. | .. | .. | .. | 4     | 2       |
| 28th | .. | .. | .. | .. | .. | 5     | 6       |
| 29th | .. | .. | .. | .. | .. | 9     | 4       |
| 30th | .. | .. | .. | .. | .. | 12    | 10      |
| 31st | .. | .. | .. | .. | .. | 11    | 9       |

# METEOROLOGICAL REGISTER, YORK, 1883.

Based on observations taken at the Museum at York at 9 a.m. and 9 p.m. each day, local time. The self-registering instruments were read at 9 p.m., and the readings entered to the day on which they were made, while the Rainfall was measured at 9 a.m., and the amount registered entered to the *preceding* day.

| BAROMETER. |          |         | THERMOMETER. |                  |                  |            |          | RAIN.   |         |                | NON-OFFICIAL RAIN RETURNS. |                   |                     |                       |                                     |                    |                                    |
|------------|----------|---------|--------------|------------------|------------------|------------|----------|---------|---------|----------------|----------------------------|-------------------|---------------------|-----------------------|-------------------------------------|--------------------|------------------------------------|
| Month.     | Highest. | Lowest. | Mean.        | Average Maximum. | Average Minimum. | Mean Temp. | Highest. | Lowest. | Totals. | Greatest Fall. |                            | Bootham,<br>York. | Coney St.,<br>York. | Cherry Hill,<br>York. | Park Street,<br>The Mount,<br>York. | Ikley<br>(640 ft.) | Hull<br>(mean. of two<br>returns). |
|            |          |         |              | Deg.             | Deg.             | Deg.       | Deg.     | Deg.    |         | Depth.         | Date.                      |                   |                     |                       |                                     |                    |                                    |
| Jan.       | 30·631   | 28·630  | 29·835       | 43·7             | 35·0             | 39·4       | 55·0     | 26·0    | 2·58    | ·49            | 24th                       | 3·34              | 2·30                | 2·49                  | 2·53                                | 5·24               | 2·10                               |
| Feb.       | 30·705   | 28·907  | 29·987       | 47·7             | 36·8             | 42·3       | 57·0     | 29·0    | 2·52    | ·45            | 10th                       | 3·14              | 2·25                | 2·46                  | 2·48                                | 3·12               | 2·66                               |
| Mar.       | 30·739   | 29·208  | 29·958       | 42·9             | 28·1             | 35·5       | 57·6     | 8·0     | 1·14    | ·31            | 19th                       | 1·45              | 1·10                | 1·12                  | 1·04                                | 1·27               | 1·31                               |
| April      | 30·699   | 29·458  | 30·028       | 54·7             | 37·4             | 46·1       | 64·0     | 29·0    | 1·19    | ·45            | 28th                       | 1·73              | 1·80                | 1·96                  | 1·78                                | 4·02               | 1·57                               |
| May        | 30·426   | 29·572  | 29·958       | 59·6             | 42·6             | 51·1       | 71·0     | 32·0    | 1·41    | ·25            | 10th                       | 1·14              | 1·15                | 1·10                  | 0·96                                | 1·08               | 1·69                               |
| June       | 30·375   | 29·611  | 29·979       | 65·2             | 48·8             | 57·0       | 75·3     | 40·0    | 3·33    | 1·01           | 29th                       | 2·57              | 3·32                | 3·23                  | 3·10                                | 3·70               | 3·06                               |
| July       | 30·232   | 29·357  | 29·803       | 66·3             | 50·5             | 58·4       | 75·7     | 41·0    | 4·53    | 1·12           | 20th                       | (4·40*)           | 4·48                | 4·42                  | 4·23                                | 4·05               | 3·11                               |
| Aug.       | 30·309   | 29·317  | 29·952       | 68·1             | 51·0             | 59·6       | 74·5     | 44·5    | 1·09    | ·26            | 8th                        | 0·91              | 1·16                | 1·28                  | 1·17                                | 2·19               | 1·22                               |
| Sept.      | 30·331   | 28·716  | 29·799       | 63·3             | 49·6             | 56·5       | 73·4     | 42·8    | 4·31    | ·96            | 10th                       | 4·25              | 3·98                | 4·12                  | 3·89                                | 6·73               | 3·95                               |
| Oct.       | 30·504   | 29·167  | 29·920       | 55·5             | 42·7             | 49·1       | 69·8     | 32·0    | 2·28    | ·43            | 3rd                        | 2·30              | 2·42                | 2·39                  | 2·22                                | 5·23               | 4·02                               |
| Nov.       | 30·299   | 28·839  | 29·729       | 47·4             | 37·3             | 42·4       | 56·1     | 29·7    | 1·99    | ·44            | 30th                       | 2·18              | 1·81                | 1·98                  | 1·85                                | 3·90               | 2·65                               |
| Dec.       | 30·605   | 29·207  | 30·091       | 44·7             | 36·2             | 40·5       | 55·0     | 27·5    | 1·12    | ·25            | 16th                       | 1·37              | 1·19                | 1·13                  | 1·10                                | 2·42               | 1·42                               |
| Year       | 30·739   | 28·630  | 29·920       | 54·9             | 41·3             | 48·1       | 75·7     | 8·0     | 28·29   | 1·12           | July 20th                  | (28·78)           | 26·96               | 27·68                 | 26·35                               | 42·94              | 28·77                              |

Note.—The Barometer readings have been corrected and reduced to 32° F. at the Mean Sea Level. \* Adopted from other Returns.

# STATION, YORK, 1883.

WIND SUMMARY.—NUMBER OF OBSERVATIONS UNDER EACH POINT.

| MONTHS.      | NORTH | N.N.E. | N.E. | E.N.E. | EAST | E.S.E. | S.E. | S.S.E. | SOUTH | S.S.W. | S.W. | W.S.W. | WEST | W.N.W. | N.W. | N.N.W. | Calm. | Variable. |
|--------------|-------|--------|------|--------|------|--------|------|--------|-------|--------|------|--------|------|--------|------|--------|-------|-----------|
| January ..   | 0     | 1      | 0    | 0      | 6    | 5      | 4    | 4      | 13    | 4      | 3    | 4      | 10   | 3      | 1    | 1      | 3     |           |
| February ..  | 2     | 0      | 0    | 0      | 1    | 1      | 3    | 6      | 16    | 5      | 3    | 5      | 14   | 3      | 0    | 1      | 0     |           |
| March ..     | 13    | 2      | 0    | 3      | 8    | 0      | 0    | 3      | 7     | 1      | 1    | 1      | 7    | 3      | 5    | 9      | 0     |           |
| April ..     | 3     | 1      | 4    | 1      | 12   | 3      | 4    | 4      | 9     | 1      | 2    | 1      | 5    | 3      | 1    | 4      | 1     |           |
| May ..       | 4     | 3      | 6    | 8      | 2    | 1      | 0    | 1      | 11    | 1      | 2    | 1      | 13   | 2      | 2    | 4      | 0     |           |
| June ..      | 3     | 2      | 5    | 3      | 8    | 3      | 3    | 2      | 10    | 1      | 4    | 1      | 4    | 3      | 2    | 1      | 1     |           |
| July ..      | 5     | 0      | 0    | 1      | 1    | 0      | 2    | 3      | 9     | 1      | 1    | 1      | 17   | 5      | 4    | 7      | 1     |           |
| August ..    | 0     | 0      | 0    | 2      | 0    | 1      | 1    | 1      | 7     | 4      | 5    | 4      | 21   | 3      | 1    | 6      | 3     |           |
| September .. | 11    | 5      | 3    | 1      | 5    | 0      | 3    | 3      | 6     | 2      | 4    | 3      | 9    | 1      | 1    | 3      | 0     |           |
| October ..   | 4     | 0      | 0    | 0      | 1    | 0      | 0    | 1      | 12    | 2      | 4    | 2      | 16   | 5      | 1    | 8      | 3     |           |
| November ..  | 4     | 0      | 0    | 0      | 0    | 1      | 0    | 0      | 17    | 0      | 6    | 0      | 15   | 3      | 0    | 7      | 0     |           |
| December ..  | 12    | 0      | 0    | 0      | 2    | 1      | 0    | 4      | 5     | 6      | 2    | 6      | 23   | 3      | 0    | 2      | 0     |           |
| Sums ..      | 61    | 14     | 18   | 19     | 46   | 16     | 20   | 32     | 122   | 38     | 38   | 29     | 157  | 37     | 18   | 53     | 12    |           |

The following Evening Lectures have been delivered in the Theatre of the Museum :—

- January 3rd .. .. On “The Geology of Palestine,” by W. H. Huddleston, M.A., F.G.S.
- January 31st .. .. On “The Rise and Progress of Spectroscopic Discovery, and its Applications to Astronomy,” by T. Gough, B.Sc., F.C.S.
- February 14th .. .. On “The Rise and Progress of Spectroscopic Discovery, and its Applications to Astronomy” (the concluding lecture on this subject), by T. Gough, B.Sc., F.C.S.

Mr. Keeping gave the following demonstrations :—

- January 14th .. .. “On the Crag of Suffolk, and its Fossil Contents.”
- January 31st .. .. “On Eocene Fossils.”

At the Monthly Meeting, held December 4th, 1883, the Rev. W. C. Hey read a paper on “The Forms of Pond Snails in Yorkshire.”

The Society has lost by Death and Resignation 34 Members, 6 Lady Subscribers, and 4 Associates ; whilst 22 Members, 3 Associates, and 2 Lady Subscribers have been added to the Society during the past year.

The names of Egerton Vernon Harcourt and the Venerable Archdeacon Creyke stand prominent in the list of those whom the Society has lost by death during the past year. Mr. Harcourt was an old member of the Society, having been elected in the year 1826, and for many years past filled the office of one of its Vice-Presidents.

The last surviving son of the late Archbishop Harcourt, and brother of the Rev. Canon Harcourt, the founder of the Society, he ever took a lively interest in its welfare.

Mr. Harcourt will be chiefly remembered for his acts of princely munificence to the Church of the Diocese with which he was officially connected as Registrar of the Province of York, and the duties of which he continued to discharge within a short time of his death.

The Venerable Archdeacon Creyke was also a valued Member of this Society, and before his retirement from the active duties of a Dignitary of the Cathedral Church of York, was one of its zealous supporters. The Archdeacon was elected a Member of the Society in the year 1831, and has also served on the Council.

Amongst the Honorary Members of the Society, the Council note the fact of the death of M. Barrande, of Prague. M. Barrande was elected an Honorary Member of the Society in the year 1881. He was a Frenchman, but for many years had resided at Prague, in Bohemia, and was closely connected as one of the chief advisers of the late Comte de Chambord, whom he survived only a few months. M. Barrande was by profession an engineer, but in the year 1833 he commenced the study of Geology, and devoted himself to the elucidation of the Silurian System of Bohemia. Shortly after his election he presented to the Society copies of several works which he had written, and to which the attention of the members of the Society was drawn at the monthly meeting in June, 1881, in a paper read by your Secretary on the works presented. His great work, "The Silurian System of Bohemia," as left at his death, consisted of 22 huge quarto volumes, partly of text and partly of plates, viz.: 6,000 pages of letterpress, and 1,160 plates of fossils. He devoted his entire income to paying the numerous collectors, workmen, and draftsmen in his employ, and it is estimated that he expended upwards of £10,000 on this great work. He died at Prague on the 5th October last, a devoted member of the Roman Church. A friendly critic, from whose notice the above facts are chiefly taken, thus writes of him:—"So fitly and nobly ends the life of one who, without ostentation or display, devoted half a century to the task of working out the Silurian Geology and Palæontology of his adopted Country (Bohemia) purely for the love of science, and

“intent on achieving a great work, and doing it thoroughly well. Of M. Barrande it may indeed with truth be said that “whatsoever his hand found to do he did it with his might.”

Another well-known Honorary Member of the Society, the Rev. Professor Dr. Oswald Heer, of Zurich, died at Zurich on the 27th of September, 1883, at the age of 75, and had the reputation of being one of the greatest of fossil botanists. His best known work, “The Primæval World of Switzerland,” has been translated by a former Keeper of this Museum, Mr. Dallas, in 1876. “Professor Heer entered the University of “Halle in 1828 to study Theology, and when he left the “University in 1832 he was ordained, but had to choose “between accepting the post of Pastor in the Lutheran Church “and that of Curator of the Entomological Collection in the “Museum at Zurich. He chose the latter, and became connected “with the University, and was afterwards Professor of Botany “in the well-known Polytechnicum from its first establishment “in 1855. Here his lectures were delivered regularly, and “were not even suspended when he was confined to his bed, “and some idea of his marvellous energy can be formed from “the fact that the Royal Society’s Catalogue assigns 95 titles of “separate papers to him up to 1874.” Professor Heer was not ashamed to own that nature was to him the great guide to nature’s God.

The following is the concluding paragraph of the work above referred to, by which he is chiefly known in this country:—  
 “An advanced knowledge of nature leads to a profound conviction that the enigmas of the natural world and of human life can only be solved by a belief in an Almighty Creator, and in the Creation of the heaven and the earth by Divine Wisdom, according to an eternal and preconceived plan.

“Nature, as well as the heart of man, bears witness to the existence of God, and it is only when seen from this point of view that the marvellous Geological History of Switzerland, with its plants and animals, appears in its true light, and affords the highest gratification.”

The Council have to report that in July last, in consequence of failing health, Mr. Keeping resigned the office of Keeper of

the Museum. The Council have elected to the office so vacated Mr. H. M. Platnauer, of the British Museum, who has produced testimonials of the highest class.

The Council recommend for election Dr. Matterson, as Vice-President, in the room of Egerton Vernon Harcourt, Esquire, deceased, and Mr. John Teasdale, and Mr. William Atkinson, who were elected for one year only at the last Annual Meeting, for re-election, and Mr. John Waddington Mann and Mr. William Lawton, as new Members of Council.

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THE TREASURER IN ACCOUNT WITH  
THE YORKSHIRE PHILOSOPHICAL SOCIETY  
FOR THE YEAR 1883.

| <b>Dr.</b>                                                                                                         | INCOME.  |    |            |          |    |    |
|--------------------------------------------------------------------------------------------------------------------|----------|----|------------|----------|----|----|
|                                                                                                                    | £. s. d. |    |            | £. s. d. |    |    |
| <b>Subscriptions:</b>                                                                                              |          |    |            |          |    |    |
| Members .....                                                                                                      | 668      | 0  | 0          |          |    |    |
| County Members .....                                                                                               | 26       | 0  | 0          |          |    |    |
| Lady Subscribers .....                                                                                             | 66       | 0  | 0          |          |    |    |
| Associates.....                                                                                                    | 17       | 0  | 0          |          |    |    |
| Arrears .....                                                                                                      | 6        | 5  | 0          |          |    |    |
| <b>Admission Fees :</b>                                                                                            |          |    |            |          |    |    |
| Paid in Full .....                                                                                                 | 12       | 0  | 0          |          |    |    |
| Paid Instalments .....                                                                                             | 27       | 0  | 0          |          |    |    |
| Keys of Gates .....                                                                                                | 63       | 10 | 0          |          |    |    |
|                                                                                                                    |          |    |            | 885      | 15 | 0  |
| <b>Rents:</b>                                                                                                      |          |    |            |          |    |    |
| Mr. Sykes, Bootham and<br>Marygate Towers ....                                                                     | 24       | 0  | 0          |          |    |    |
| Mr. Burton, Baths ....                                                                                             | 40       | 0  | 0          |          |    |    |
| Boating Club .....                                                                                                 | 5        | 0  | 0          |          |    |    |
| Do. Hedge Cutting .....                                                                                            | 0        | 10 | 0          |          |    |    |
| Fine Art Society .....                                                                                             | 2        | 0  | 0          |          |    |    |
| Water Works .....                                                                                                  | 0        | 1  | 0          |          |    |    |
|                                                                                                                    |          |    |            | 71       | 11 | 0  |
| Hire of Tent .....                                                                                                 |          |    |            | 36       | 7  | 11 |
| Meteorological Department .....                                                                                    |          |    |            | 15       | 12 | 0  |
| Whitsuntide Admission Fees after<br>deducting Expenses.. ..                                                        |          |    |            | 3        | 7  | 10 |
| Gate Money.....                                                                                                    |          |    |            | 351      | 14 | 3  |
| Catalogues and Photographs .....                                                                                   |          |    |            | 19       | 11 | 6  |
| <div style="position: absolute; top: 0; right: 0; width: 100%; height: 100%; border-left: 2px solid black;"></div> |          |    |            |          |    |    |
|                                                                                                                    |          |    | £1383 19 6 |          |    |    |

|                                                     |      |   |   |
|-----------------------------------------------------|------|---|---|
| Balance due to the Treasurer, 31st Dec., 1863 ..... | 1562 | 6 | 4 |
|-----------------------------------------------------|------|---|---|

**Permanent Debt:**

|                                   |       |       |       |
|-----------------------------------|-------|-------|-------|
| Yorkshire Insurance Company ..... | 1900  | 0     | 0     |
| Due to Two Members, 100 .....     | 100   | 0     | 0     |
|                                   | <hr/> | 2000  | 0 0   |
|                                   |       | <hr/> | <hr/> |
|                                   |       | £3562 | 6 4   |

| EXPENDITURE.                                                                              |          | Cr.   |       |
|-------------------------------------------------------------------------------------------|----------|-------|-------|
|                                                                                           | £. s. d. | £.    | s. d. |
| Crown Rent .....                                                                          |          | 1     | 0 0   |
| Corporation Rents .....                                                                   |          | 19    | 9 2   |
| Rates and Taxes.....                                                                      |          | 26    | 4 5   |
| Water Rates.....                                                                          |          | 4     | 11 6  |
| Insurance .....                                                                           |          | 5     | 8 6   |
| <i>Salaries and Wages:</i>                                                                |          |       |       |
| Mr. Keeping .....                                                                         | 200 0 0  |       |       |
| Mr. Guy .....                                                                             | 25 0 0   |       |       |
| Mr. Fielden .....                                                                         | 60 0 0   |       |       |
| Miss Baines .....                                                                         | 39 0 0   |       |       |
| John Davison (Pension)                                                                    | 26 0 0   |       |       |
| Attendants, Museum ..                                                                     | 75 8 0   |       |       |
| Do., Hospitium ..                                                                         | 26 7 0   |       |       |
| Gardeners, including<br>night duty and extra<br>labour.....                               | 162 0 6  |       |       |
|                                                                                           |          | 613   | 15 6  |
| Interest to Insurance Com-<br>pany, less Tax.....                                         | 74 3 5   |       |       |
| Interest to Bankers .....                                                                 | 86 1 5   |       |       |
|                                                                                           |          | 160   | 4 10  |
| <i>General Repairs and<br/>Expenses, &amp;c.</i>                                          |          |       |       |
| Museum and Hospitium..                                                                    | 48 12 4  |       |       |
| Estate .....                                                                              | 43 16 3  |       |       |
|                                                                                           |          | 92    | 8 7   |
| <i>Gardens:</i>                                                                           |          |       |       |
| General Expenses, Repairs and<br>Additions .....                                          |          | 68    | 9 11  |
| Seeds .....                                                                               |          | 5     | 1 5   |
| Coke, Tar, &c.....                                                                        |          | 14    | 17 3  |
| Library: Books, Binding, &c. ....                                                         |          | 32    | 2 9   |
| <i>Miscellaneous:</i>                                                                     |          |       |       |
| Printing and Stationery .....                                                             |          | 39    | 6 3   |
| Printing Reports .....                                                                    | 14 10 0  |       |       |
| Do. Communications<br>to Members and postages                                             | 9 14 1   |       |       |
|                                                                                           |          | 63    | 10 4  |
| Coals, Gas, &c. ....                                                                      |          | 47    | 3 8   |
| Military Bands .....                                                                      |          | 20    | 11 6  |
| Purchases & Repairs, &c., Antiquities                                                     |          | 72    | 16 0  |
| New Tent Cover, &c., less<br>£8 allowed for old one ..                                    | 60 10 0  |       |       |
| Do. New Ropes, Carriage<br>and Attendant fixing and<br>removing when out on<br>hire ..... | 18 19 9  |       |       |
|                                                                                           |          | 79    | 9 9   |
| Meteorology.....                                                                          |          | 15    | 12 0  |
| Lectures .....                                                                            |          | 7     | 9 2   |
| Sundries .....                                                                            |          | 12    | 4 10  |
|                                                                                           |          | 1362  | 11 1  |
| Excess of Income over Expenditure                                                         |          | 21    | 8 5   |
|                                                                                           |          | £1383 | 19 6  |

|                                                    |      |    |   |
|----------------------------------------------------|------|----|---|
| Balance due to the Treasurer, 31st Dec., 1882..... | 1583 | 14 | 9 |
| Less excess of Income over Expenditure .....       | 21   | 8  | 5 |

*Permanent Debt:*

|                                   |      |   |   |           |
|-----------------------------------|------|---|---|-----------|
| Yorkshire Insurance Company ..... | 1900 | 0 | 0 |           |
| Due to Two Members,               | 100  | 0 | 0 |           |
|                                   |      |   |   | 2000 0 0  |
|                                   |      |   |   | £3562 6 4 |

**E. GRAY,**  
Hon. Treasurer.

**Audited and found correct,**  
W. L. NEWMAN.  
York, February 4th, 1884.

## NEW MEMBERS.

Nelson, John, *Bootham*.  
 Metcalfe, Major, *West Huntington*.  
 Bland, Col. R. E., *The Crescent*.  
 Woods, S. Everett, *The Retreat*.  
 Daniel, Mrs., *Grosvenor Terrace*.  
 Makins, J. W., *Marygate*.  
 Stevenson, Thos., 16, *Bootham Terrace*.  
 Gray, John, *Coney Street*.  
 Wilkie, Col., *Minster Court*.  
 Knowles, Col., 3, *Museum Street*.  
 Murray, Major, 15, *Grosvenor Terrace*.  
 Browne, Geo., 80, *Micklelegate*.  
 Richardson, Capt., *Bootham*.  
 Sowden, J. H., *Grove Park*.  
 Hutchings, Lewis, 23, *St. Mary's*.  
 Clarke, Rev. H. L., *Clifton Green*.  
 Sparks, J., 4, *Crescent*.  
 Smith, Joseph, *St. Peter's Grove*.  
 Spencer, H. E., 23, *Monkgate*.  
 Bellerby, Wm., *Petergate*.  
 Wild, Assist. Commissary General, 18, *Bootham Terrace*.  
 Collis, Capt. Wm. Cooke, *Sycamores, Bootham*.

## LADY SUBSCRIBERS.

Gray, Miss A. E., *Marygate*.  
 Wilkinson, Miss, 12, *Bootham Terrace*.

## ASSOCIATES.

Shawe, F. R., *Club Chambers*.  
 Leeman, F., 15, *Bootham*.  
 Taylor, H. D., *Westfield House, Heworth Green*.

## RESOLUTIONS

PASSED AT THE ANNUAL MEETING, FEBRUARY 5th, 1884.

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1. That the Report of the Council now read be adopted and printed for circulation amongst the Members, Lady Subscribers, and Associates.

2. That the thanks of the Society be given to the Members of the Council retiring from office, also to the Treasurer, Secretary, and Curators for their valuable services; and that authority be given to the Council to give admission to the public to the Museum on Whit-Monday and Tuesday, under the same regulations as last year.

3. That the thanks of the Meeting be given to the Chairman.

## DONATIONS TO THE MUSEUM AND LIBRARY.

## LIBRARY.

| BOOKS PRESENTED.                                                                                                       | DONORS.                                                    |
|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| The Journal of the Linnæan Society, xx.,<br>125 .....                                                                  | W. H. Rudston Read,<br>Esq.                                |
| Hourly Readings, 1881, Meteorological<br>Society .....                                                                 | The Meteorological<br>Council.                             |
| Madeira Spectroscopic, by C. Piazzi<br>Smyth, Astronomer Royal for Scotland<br>(15, Royal Terrace, Edinbro') .....     | The Author.                                                |
| Transactions of the Edinburgh Geolo-<br>gical Society, vol. iv., part ii. ....                                         | The Society.                                               |
| Extrait du Bulletin du Musée royal<br>d'histoire naturelle de Belgique ....                                            | Prof. Dupont.                                              |
| Atti della R. Accademia dei Lincei, vii.,<br>1, 2, 3. ....                                                             | The Academy.                                               |
| Journal of the Chemical Society, Jan.<br>and Feb., 1883 .....                                                          | The Chemical Society.                                      |
| Annual Report of the Bureau of Eth-<br>nology, by J. W. Powell, Washington,<br>1881 .....                              | The United States<br>Government.                           |
| Der Norske Nordhøys Expedition, 1876<br>—1878, vol. viii. (Zoologi), and vol.<br>ix. (Chemie) .....                    | The Norwegian<br>Government.                               |
| Blumenbach—Histoire Naturelle, 1803                                                                                    | Rev. C. B. Norcliffe.                                      |
| Walker's Institutes of Natural History,<br>1792 .....                                                                  | Rev. C. B. Norcliffe.                                      |
| The Flora Brasiliensis, Op. C. F. P. de<br>Martin's Compositæ, part iii., by J.<br>G. Baker .....                      | J. G. Baker, Esq.,<br>keeper of the Her-<br>barium at Kew. |
| Monographie des Mammifères Fossils, de<br>la Lombardie, par. E. Cornalia (Palé-<br>ontologie Lombard, series x.) ..... | J. F. Walker, M.A.                                         |

## BOOKS PRESENTED.

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|----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|
| Description of the Skull of an Ox from<br>the bed of the River Avon, by H.<br>Woods, 1839.....                             | } J. F. Walker, M.A.                                 |
| British Association Report, 1882.....                                                                                      | The British Association.                             |
| Journal of the Linnæan Society, Zoo-<br>logy, No. 97; Botany, No. 126. Also<br>the proceedings of the same.....            | } W. H. Rudston Read,<br>Esq., M.A.                  |
| Journal of the Chemical Society.....                                                                                       | The Chemical Society.                                |
| Hourly Readings, 1881, part iii.....                                                                                       | Meteorological Society.                              |
| Scott's Elementary Meteorology.....                                                                                        | Meteorological Society.                              |
| Retrospections, Social and Archæological,<br>by C. Roach Smith, F.S.A., vol. i.....                                        | } The Author.                                        |
| Minutes, &c., of the Political Economy<br>Club, 1821—1882.....                                                             | } The Committee of the<br>Political Economy<br>Club. |
| The Fossils and Palæontological Affinities<br>of the Neocomian Deposit of Upware<br>and Brickhill, by Walter Keeping, M.A. | } The Author.                                        |
| Journal of the Chemical Society, vol. 43,<br>No. 246.....                                                                  | } The Chemical Society.                              |
| Proceedings of the Royal Institution of<br>Great Britain, vol. x., part I.....                                             | } The Royal Institution.                             |
| Journal of the Linnæan Society, Botany<br>xx. 127, and Zoology, v. 17 .....                                                | } Mr. W. H. Rudston<br>Read, M.A.                    |
| Proceedings of the Yorkshire Geological<br>and Polytechnic Society, 1871—1882..                                            | } Mr. J. W. Davies,<br>F.G.S.                        |
| Quarterly Weather Report, No. 50, and<br>Rainfall Tables of the British Isles,<br>1866—1880 .....                          | } The Meteorological<br>Council.                     |
| Halitherium Schinzi, die Fossile Sirene<br>des mainzer Beckens .....                                                       | } Mr. W. Keeping, M.A.,<br>or Dr. G. R. Lepsius.     |
| Atti della Reale Accademia dei Lincei,<br>vol. vii., page 9-10 .....                                                       | } The Academy.                                       |
| Calendar and Prospectus of the Yorkshire<br>College, Leeds .....                                                           | } The Council.                                       |
| The Journal of the Chemical Society, vol.<br>xliii., No. 248—290 .....                                                     | } The Society.                                       |
| Compendium of the Tenth Census of the<br>United States (1880), parts I., II....                                            | } United States Govern-<br>ment.                     |

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| Memoirs of the Geological Survey of India, "Palæontologia Indica," vol. ii., part 5; and Memoirs of the Geological Survey of India, vol. xxii..... | The Indian Government.         |
| The Quarterly Weather Report, 1877..                                                                                                               | Meteorological Council.        |
| Hourly Readings, 1881 .....                                                                                                                        | Meteorological Council.        |
| A Synonymic Catalogue of diurnal Lepidoptera, by W. F. Kirby.....                                                                                  | The Rev. F. O. Morris.         |
| The Journal of the Linnæan Society, Zoology and Botany, vol. xvii., Nos. 99-100; and vol. xx., 128-129.....                                        | W. H. Rudston Read, Esq., M.A. |
| The Transactions of the Zoological Society of London, vol. x., parts 7-8..                                                                         | The Society.                   |
| The Report, Norwegian North Atlantic Expedition, 1876—78. Meteorology by H. Mohn .....                                                             | Norwegian Government.          |
| Extraits du Bulletin du Musée royal, Belgium.....                                                                                                  | Dr. J. C. Purves.              |
| Atti della R. Accademia dei Lincei, 1882-3. ....                                                                                                   | The Academy.                   |
| Annual Report of the Leeds Literary and Philosophical Society, 1882-3.....                                                                         | The Society.                   |
| Proceedings of the Warwickshire Field Club.....                                                                                                    | The Club.                      |
| Report of the Leicester Literary and Philosophical Society .....                                                                                   | The Society.                   |
| Contributions of "La flore fossile du Japon" .....                                                                                                 | The Author.                    |
| Transactions of the Zoological Society of London, vol. xi., part ix.....                                                                           | The Society.                   |
| List of the Vertebrated Animals in the Gardens of the Zoological Society of London .....                                                           | The Society.                   |
| The Journal of Linnæan Society, Zoology, vol. xvii., No. 101.....                                                                                  | W. H. Rudston Read, Esq.       |
| The Proceedings of the Bristol Naturalists' Society.....                                                                                           | The Society.                   |
| The Journal of the Chemical Society, No. 252 .....                                                                                                 | The Society.                   |

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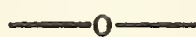
## DONORS.

|                                                                                                                                                                                                   |   |                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|--------------------------------|
| The Smithsonian Report, 1881 .....                                                                                                                                                                | { | United States Govern-<br>ment. |
| The Quarterly Report and Meteorological<br>Atlas .....                                                                                                                                            | } | The Meteorological<br>Society. |
| The Annual Report of the Liverpool<br>Geological Association.....                                                                                                                                 | } | The Association.               |
| Two Papers on Roman Tesselated Pave-<br>ments, and a Hoard of Roman Coins,<br>by C. Roach Smith, Esq.....                                                                                         | } | The Author.                    |
| The Memoirs of the Geological Survey of<br>India, "Palæontologica Indica," series<br>13, vols. 1 and 2; series 10, vol. 2;<br>series 12, vol. 4 (with plates); vol. 19<br>parts 2, 3, and 4)..... | } | The Indian Government.         |
| Records of the Geological Survey of<br>India, vol. 15, parts 1, 2, 3, and 4....                                                                                                                   | } |                                |
| Heilagra Manna Sögur, by C. R. Unger,<br>2 vols. ....                                                                                                                                             | } |                                |
| Die Anämie, by S. Laache .....                                                                                                                                                                    | } |                                |
| Om Poncelet's Betydning for Geometrien,<br>by Elling Holst .....                                                                                                                                  | } |                                |
| Die Flexion des Pali, by Alf. Torp....                                                                                                                                                            | } |                                |
| Myntfundet fra Grøslid i Thydalen,<br>by Dr. L. B. Stenerson .....                                                                                                                                | } | The Norwegian Govern-<br>ment. |
| Classification der Flächen nach der<br>Transformationsgruppe ihrer geodä-<br>tischen Curven, by Sophus Lie.....                                                                                   | } |                                |
| Krystallograpisk chemiske undersø-<br>gelser, by T. Huitdahl.....                                                                                                                                 | } |                                |
| The Hourly Readings, Sunshine Re-<br>cords, and Report of the Second Meet-<br>ing of the Meteorological Society....                                                                               | } | The Society.                   |
| The Memoirs of the Geological Survey of<br>India, "Palæontologica Indica," series<br>14, vol. 1, part 4.....                                                                                      | } | The Indian Government          |
| The History of Electricity, by John<br>Priestley; and The History of Vision,<br>Light, and Colours, by the same<br>author.....                                                                    | } | Rev. John Hodgkinson.          |

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|---------------------------------------------------------------------------|---|--------------------------|
| The Proceedings of the Geologists' Association, vol. viii., No. 3. ....   | } | The Association.         |
| The Anuario del Observatorio Astronomico Nacional .....                   |   |                          |
| The List of Members and Proceedings of the Linnæan Society of London..... | } | W. H. Rudston Read, Esq. |
|                                                                           |   |                          |



## MUSEUM.

## GEOLOGICAL DEPARTMENT.

## DONORS.

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|-------------------------------------------------------------------------------------|---|------------------------------------------|
| A series of Brachiopods from the Inferior Oolite of the Cotteswolds .....           | } | Mr. Wm. Reed, F.G.S.                     |
| A collection of Fossils from the Portland Sands and Portland Oolite, of Swindon.    |   |                                          |
| Group of Heads and Stems of a small type of <i>Pentacrinus</i> from the Lias ....   |   |                                          |
| A set of 46 "finds" from Kents Cavern, Torquay .....                                | } | Lord Haldon and the British Association. |
| Fifty specimens of Brachiopods from the Devonian Limestone of the Eifel ....        |   |                                          |
| Sixty specimens from the Ohloritic Marl of Eggerdon Hill, & Chard, Somerset.        | } | Mr. J. F. Walker, M.A.                   |
| Four sections of <i>Ichthyosaurus</i> vertebræ, Red Chalk, Hunstanton .....         |   |                                          |
| Two Antlers of Red Deer, from the peat deposit at Barmston, Yorkshire.....          | } | Sir Hy. Boynton.                         |
| Forty-two species of shells from the Paris Basin ( <i>Calcaire Grossier</i> ) ..... |   |                                          |
| Twelve specimens from the Chalk of the South of England.....                        | } | Mr. Wm. Reed, F.G.S.                     |
| Portion of Skull of <i>Teleosaurus</i> , and Fish Remains from the Whitby Lias..... |   |                                          |

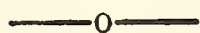
## DONORS.

Fossils and Rock Specimens from the Coral Rag of Thornton, the Millepore of South Cave and of Whitwell; the Calcareous Grit of Castle Howard, and the Chalk of Hessle, &c., collected by the Keeper of the Museum.

|                                                                                                                                                                                                       |                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| Mandible of a Beaver ( <i>Castor Europeanus</i> )..                                                                                                                                                   | Mr. W. Roden, Blue Coat School. |
| A few Fossils from the Lias of Topcliffe, near Thirsk .....                                                                                                                                           | Mr. Gregson, Thirsk.            |
| Several choice Fossils from the Chalk of the South of England, including two species of the Starfish ( <i>Goniaster</i> ) .....                                                                       | Mr. Wm. Reed, F.G.S.            |
| A curious Crystalline hollow concretion of carbonate of Lime, containing another solid body, from sand and gravel (in boulder clay?) at Heworth Green Gasworks excavations, York, six feet deep ..... | The Rev. Canon Raine, D.C.L.    |
| Skull of <i>Bos Longifrons</i> from the peaty earth excavated in Clifford Street (New Institute) .....                                                                                                |                                 |
| Thirteen Graptolites from the Skiddaw Slate, Skiddaw .....                                                                                                                                            |                                 |
| Forty-five species of Fossils from the Oldhaven Beds at Upnor, and Croydon.                                                                                                                           |                                 |
| Thirty-six species of Post Tertiary Fossils from Barnwell and the Island of Arran.                                                                                                                    |                                 |
| Sixty species of Polyzoa from the Red Crag of Walton-on-the-Naze, Essex..                                                                                                                             |                                 |
| Eight species of Polyzoa from the Coral-line Crag of Suffolk .....                                                                                                                                    | Wm. Reed, Esq., F.G.S.          |
| 220 specimens of Fossils from the Red Crag of Walton-on-the-Naze, Essex..                                                                                                                             |                                 |
| Sixteen Rock Specimens from the Red Crag, Suffolk .....                                                                                                                                               |                                 |
| Twelve Ammonites (of various types) and Fossils from the Portland Beds, Swindon .....                                                                                                                 |                                 |

## DONORS.

|                                                                                                                                                                                                                                                                   |                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| Forty-five Rock Specimens of Volcanic Ashes, Lavas, &c., illustrating the structure of the Keswick district, Borrowdale, &c., and as shewing the alteration of the rocks in the neighbourhood of the Skiddaw Granite; from the Lake District, Borrowdale, &c..... | } Wm. Reed, Esq., F.G.S.     |
| A series of Fossils from the Lower Chalk of Thixendale, Yorkshire.....                                                                                                                                                                                            |                              |
| Tooth of Sargodon and Fish Plate from the Rhætic, of Aust Cliff, Bristol....                                                                                                                                                                                      |                              |
| Spine of Hybodus from Lyme Regis. ..                                                                                                                                                                                                                              |                              |
| Two specimens of Miliobates Jaws from Bracklesham .....                                                                                                                                                                                                           |                              |
| A Series of Fossil Sponges, &c., from the chalk of Yorkshire .....                                                                                                                                                                                                | } S. Chadwick, Esq.          |
| Boulders from the boulder clay at the New Gasworks, near Monk Bridge..                                                                                                                                                                                            |                              |
| A Rock Specimen from Penmaenmacor, North Wales.....                                                                                                                                                                                                               | } Miss Raine.                |
| Eighteen species of Fossils from the Middle Oolite of Oxfordshire.....                                                                                                                                                                                            |                              |
| One Echinus, 2 Sponges, and 4 Inocerami from the chalk of Yorkshire .....                                                                                                                                                                                         | } S. Chadwick, Esq., Malton. |
|                                                                                                                                                                                                                                                                   |                              |



## MINERALOGY.

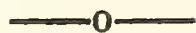
## DONORS.

|                                                                                                                                |                                  |
|--------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| Large Crystal of Calcite, Calamine (carbonate of zinc) and "cauk" (sulphate of Barytes) from the Magpie Mine, Derbyshire ..... | } Dr. C. H. Dunhill.             |
|                                                                                                                                |                                  |
| Native Gold                      Pyrites                                                                                       | } W. H. Huddleston, Esq., F.G.S. |
| Native Silver                    Celestine                                                                                     |                                  |
| Native Copper                  Cassiterite                                                                                     |                                  |
| Native Bismuth                Psilomelan                                                                                       |                                  |
| Native Antimony               Wad                                                                                              |                                  |
| Galena                            Manganite                                                                                    |                                  |

## DONORS.

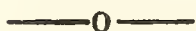
|              |               |
|--------------|---------------|
| Pyromorphite | Melanterite   |
| Crocoisite   | Molybdenite   |
| Mimetesite   | Malachite     |
| Anglesite    | Erythrite     |
| Hemimorphite | Atacamite     |
| Calamine     | Antimonite    |
| Blende       | Cinnabar      |
| Pyrargyrite  | Bismuthite    |
| Proustite    | Mispickel     |
| Agate        | Realgar       |
| Garnet       | Chalcopyrite  |
| Häüyne       | Fluor         |
| Lepidolite   | Chessylite    |
| Amethyst     | Rhodocroisite |
| Dolomite     | Clinoclase    |
| Calcite      | Rutile        |
| Quartz       | Kupfernickel  |
| Barytes      | Ilmenite      |
| Sulphur      | Bournonite    |
| Strontianite | Brochantite   |
| Chalybite    |               |

W. H. Huddleston,  
Esq., F.G.S.



## ZOOLOGY.

Two Skins of Apteryx from New Zealand { Rev. C. Meysey  
Thompson.



## BOTANY.

Thirty Plants have been presented to the Society by W. H.  
Rudston Read, Esq., namely:—

## STOVE AND GREENHOUSE PLANTS.

|                    |                      |
|--------------------|----------------------|
| Dracæna terminalis | Panicum Sulcatum     |
| Dracæna conjesta   | Myriocarpa stipitata |
| Croton acubœfolia  | Pitcairnia Jacksoni  |
| Phoenix rupicola   | Fittonia Pearcei     |

|                             |                              |
|-----------------------------|------------------------------|
| Bouvardia " Alfred Neuner " | Fittonia Argyroneura         |
| Impatiens Sultani           | Pellionia Daveaueana         |
| Impatiens Alba              | Plumbago Capensis            |
| Begonia " Louis Chretien "  | Heliatropium " Rose Clair "  |
| Begonia Knowsleyana         | Habrothamnus elegans Newelli |
| Begonia Ascotensis          | Dahlia " Harlequin "         |

Chrysanthemum frutescens *var* Halleri.

„ „ Etoile d'or.

#### ORCHIDACEÆ.

|                  |                   |
|------------------|-------------------|
| Pleione humilis  | Pleione Wallichii |
| Pleione maculata | Cælogyne nitida   |

#### FILICES, &c.

|                     |                    |
|---------------------|--------------------|
| Adiantum Bausei     | Asplenium Fabianum |
| Adiantum Farleyense | Selaginella cæsia  |



COMMUNICATION  
TO THE  
MONTHLY MEETING  
OF THE  
YORKSHIRE PHILOSOPHICAL SOCIETY,  
1883.

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December 4th, 1883.—The Rev. W. C. HEY, M.A., read the following paper on “The Forms of Pond-snails in Yorkshire.”

In a previous paper read before this Society, I described some forms and varieties of Land-snails, suggesting some possible explanations of these varieties, and also pointing out the difficulties on which these explanations throw little or no light. Our Pond-snails also present considerable variety—not so much variety of colouring as the Land-snails, but a far greater variety of form.

Almost all air-breathing Pond-snails are of an uniform horn colour. One might be tempted to explain this lack of brilliant colouring so conspicuous in Land-snails, on the ground that in their weedy, watery element they were less accessible to the rays of light; but the fact that sea-shells living in far deeper waters are often most gorgeously tinted, rather militates against such an hypothesis. Perhaps we must rather look to that “*Deus ex machina*” of the modern scientist—natural selection—and believe that the colouring of Pond-snails is protective, as it renders them very inconspicuous among the watery weeds.

In the genus *Limnæa* (to which the following remarks exclusively refer) only two variations from the normal colour occur, at any rate in Britain. White varieties are known of several species, *e.g.*, *L. glabra* occurs in a white form at York,

and *L. palustris* at Beverley. Indeed it may be doubted whether any species of plants or animals do not occasionally present white varieties, though some kinds have a much greater tendency to white varieties than others. The common Harebell, the Foxglove, the Fritillary are instances of plants where the white variety is very common—possibly it is in these cases a return to an earlier form. However in the genus *Limnæa*, the white variety is very rare, and I do not in Yorkshire know of any but casual instances of individuals. It is clear, however, that among land-snails the white variety is transmitted from parent to child, for year after year I have observed a colony of white garden-snails on a hedge bank at Bridlington, though there are plenty of the common coloured ones on each side of them, so that there is evidently nothing peculiar in the soil or vegetation affecting the individual. As these white snails must be very conspicuous to thrushes it is a wonder they have survived. Besides the white varieties, I believe a striped form (which is exceedingly rare) is the only exception to the uniform horn-colour of the *Limnæas*.

As to varieties of form, they are much more numerous, and naturally the more numerous according to the variety of localities which a species affects. Some kinds are very much restricted in distribution, and only occur under special circumstances; others are found over a wide area, and under a great variety of conditions. The restricted kinds generally show but little variation in form, texture, or colour, while the widely diffused often exhibit great diversity in these particulars. This is what we should expect. Similar surroundings produce similar forms; varied surroundings evoke corresponding modifications. Most of our *Limnæas* affect still grassy pools or very slow ditches, but the commonest kind of all—*Limnæa peregra*—seems to have almost as astonishing powers of adaptation to circumstances as man himself. A puddle, a ditch, a deep river, a mountain lake, a rapid pebbly stream, our common pond-snail will make itself at home in any of them.

One of the commonest modifications shells suffer is decoliation, *i.e.*, loss of the end of the spire. This may be due to either of two causes. Some snails secrete the material of their

shell faster than their own bodies grow, consequently they desert the topmost whorls of their shells, which, becoming dry and brittle, break off. Untenanted houses—even those occupied by snails—soon fall into disrepair. The most notable instance of this phenomenon is *Bulinus decollatus*—a species common in France and Spain. Of pond-snails, *Limnæa glabra*, a species very common near York, becomes truncated from this cause. Other shells, chiefly freshwater shells, lose their top whorls by erosion, owing to the presence of carbonic acid in the water. Near York specimens of *L. peregra* are to be found decollated in ponds near Bootham Stray and elsewhere. I have, however, once found near York a pond full of our largest pond-snails, *L. stagnalis*, where the erosion had affected all parts of the shell equally, and so thin had they become that when I lifted some of them out of the water, the weight of the snail inside was sufficient to break the shell.

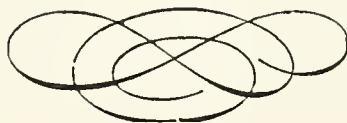
When *L. peregra* lives in clear running streams, as *e.g.*, at Guisborough, it is often decollated from mechanical rather than chemical action.

*L. peregra* appears to attain its maximum of development in stagnant ponds and ditches. The spire is usually very short in these cases, and the mouth of the shell immensely widened, the lip sometimes spreading to such an extent that it absolutely assumes another direction, and is considerably reflexed. In a ditch at Middlethorpe the specimens so closely approach in form another species (*L. auricularia*) that one of our best authorities was deceived at the first sight. Some specimens from this locality present the phenomenon of an addition to the lip after the shell had apparently assumed its normal proportions. One year almost all the specimens of *L. stagnalis* living in Seamer Mere, near Scarbro', presented the same phenomenon, only in this case the added part starts from a point just inside the previously completed lip, and I can only suggest one explanation of this fact, viz., that some exceptional circumstances (possibly an unusually mild winter) had prolonged the life of the individuals beyond their allotted span. In other years I could never find a single specimen with the added lip, which in that particular year seemed almost universal.

It very rarely happens that *L. peregra* retains an elongated form when it grows to any great size. A specimen of this shape I obtained in a pond near Flambro' Head was considered so unusual that it was figured a short time ago in the Journal of Conchology.

When the Ouse is let off, it is rather surprising to find that *L. peregra* swarms in certain parts. It lives here in quite deep water, but its ordinary habitat is a shallow pond. Under these unusual circumstances, although so plentiful, it is very poorly developed, indeed quite dwarfed. Some conditions seem favourable to the production of a number of individuals, but unfavourable to their development.

From these remarks it will be seen that Pond-snails furnish us with abundant questions concerning their forms, just as the Hedge-snails supplied us with so many problems about their colours. Why the lip of the shell should become so widely expanded, and the spire so short under certain circumstances, and why, under other circumstances, the spire should become so elongated, and the mouth (comparatively speaking) so contracted—why, again, in some localities, we should find the spire as acute as a needle, and in others perfectly blunt, or even intorted—these, and the like, are questions which the modern school of science feels sure are worth investigation and have answers, because the great induction receives daily confirmation that no natural phenomenon is produced without an adequate natural cause.



*Presented.*  
13 MAR 1886













